

NOTE

New Records and Notes on the Ecology of African Species of *Melyris* Fabricius
(Coleoptera: Melyridae), with Discussion of Pollination Biology

The beetle genus *Melyris* Fabricius contains 113 described species, most of which are known only from sub-Saharan Africa (Pic 1929, Peacock 1980). Adults of many species in this genus are brightly colored, with green, blue, violet, or coppery iridescence. The adult beetles are often abundant on flowers and consequently many species are represented in museum collections by large series of specimens. Despite the abundance and attractive coloration of these beetles, very little has been published about them, aside from an early taxonomic study by Champion (1919) and a catalogue of species by Pic (1929). In this paper, I present new distributional records for five species, review the existing literature on the ecology of species in this genus, and describe field observations made in South Africa in September, 2006.

In preparation for more detailed studies of this group, I examined the collection of *Melyris* species in the National Museum of Natural History, Smithsonian Institution. During the course of this curatorial work, I discovered the following specimens which represent new distribution records. For accuracy, I have given the country and locality information exactly as it appears on the original specimen labels, keeping in mind that in several cases these names have changed since the specimens were collected and labeled.

Melyris abdominalis Fabricius.—Ivory Coast, 23 km E of Toumodi, 12-14.X.1971 (16 adults); Côte d'Ivoire, Ferkessédougou (6 adults). New country record. This is a common species which has been previously reported from many

West African countries, including Benin, Cameroon, Ghana, Nigeria, and Senegal (Champion 1919).

Melyris alluaudi Pic.—Kenya, Nairobi, 12.I.1920 (1 adult). Previously known only from montane areas such as the slopes of Mt. Kenya, Kilimanjaro, and the Ruwenzori Mountains (Champion 1919). The Nairobi record suggests a broader distribution for this species within Kenya.

Melyris nigripes Harold.—Rhodesia, Chingola Dist. X-XII.1960 (1 adult). New country record. This species is abundant in the Congo River basin and there are also records from present-day Malawi and Zambia (Champion 1919).

Melyris quadricollis Champion.—Ethiopia, Alemaya, 1.V.1913, in roses (7 adults), 26 IV.1964, in roses (7 adults). Known previously from only two localities in Ethiopia, with no information available about floral associates (Champion 1919).

Melyris sansibarica Harold.—Kenya, Makindu near Thabu on Athi River, IX-1956 (4 adults), Golini, IX-1934 (1 adult), Simba, VI-1934 (1 adult). Known previously from only two localities, the type locality of Zanzibar and Kitui, Kenya (Champion 1919). The new records suggest a fairly broad distribution for this species within Kenya.

Very little has been published to date on the ecology of species of *Melyris*. Adults of species in this genus are found on flowers, where they feed on nectar, pollen, and floral parts and may form large feeding aggregations (Evans 1984). Plant genera whose flowers are known to be visited by these beetles include *Acacia* (Mimosaceae), *Delairea*, *Echinops*, *Heli-*

chrysum (Asteraceae), *Protea* (Proteaceae), and *Rosa* (Rosaceae) (Champion 1919, Evans 1984, Grobbelaar et al. 2000, Iziko Museums of Cape Town 2004). I report a collection of *Melyris* from flowers of *Brachylaena* (Asteraceae) for the first time below.

Many of the museum specimens that I examined were covered with dried nectar and/or pollen grains, suggesting that species of *Melyris* may function as pollinators of the flowers they visit. Pollination by melyrid beetles has been confirmed in North America (Grant and Grant 1965) and South America (Medan 1990). In South Africa, du Toit (1990) investigated the pollination efficiencies of the introduced melyrid *Astylus atromaculatus* Blanchard in plantations of commercial sunflowers (*Helianthus annuus* L.). Under the experimental conditions established by du Toit, commercial sunflowers pollinated by *A. atromaculatus* have higher seed set (76% versus 72%) than flowers pollinated by honeybees (*Apis mellifera* L., Hymenoptera: Apidae). Given that the genus *Astylus* Castelnau is closely related to *Melyris* (essentially forming its South American counterpart within the subfamily Melyrinae), it seems likely that species of *Melyris* also serve as pollinators.

On September 3 and 4, 2006, I visited the National Botanic Garden in Pretoria, South Africa, where I observed adults of *Melyris natalensis* Boheman on flowers of the tree *Brachylaena elliptica* (Thunberg) DeCandolle (Asteraceae). The melyrid beetles were the most numerous visitors to these flowers; other floral visitors included syrphid flies (Diptera: Syrphidae), halictid bees (Hymenoptera: Halictidae), and honeybees. Each terminal flower cluster had 2–8 beetles present. The beetles fed on pollen and were observed crawling from flower to flower during the course of feeding. Pollen grains were observed adhering to the beetles. When disturbed, the beetles

dropped from the flowers or took flight, indicating that they have the potential to move between inflorescences or even trees.

Further field investigations of the pollination ecology of species of *Melyris* are clearly indicated. Other potential directions for study are indicated by fascinating but fragmentary reports such as that of Evans (1984), who reported that the Lebanese species *Melyris bicolor* F. is “distasteful to avian insectivores” and “aposematic” in its coloration. The possibility that some species of *Melyris* are chemically defended should not be ruled out, as similar defenses are known to occur in species of the related family Cleridae (Mawdsley 2002).

Another interesting report is that of Nash (1933), who reported that larvae of *Melyris pallidiventris* Pic were predators of the puparia of the tsetse fly *Glossina morsitans* Westwood (Diptera: Glossinidae). The melyrid larvae were found only in the laboratory, not “in the bush;” however, in the laboratory they were abundant enough to become a “nuisance” (Nash 1933). Clearly, further investigations of the larvae and larval biology of *Melyris* species are needed in areas where tsetse flies are endemic, to determine whether or not these beetles are actually significant predators of the flies in natural settings.

For assistance with the field portion of this study, I thank Ralph and Alice Mawdsley of Cleveland State University, as well as Hendrik Sithole and Freek Venter of South Africa National Parks. For permission to examine specimens in their care, I thank Natalia Vandenberg, Systematic Entomology Laboratory, USDA, and Terry Erwin, National Museum of Natural History, Smithsonian Institution. Enid Peacock, formerly of The Natural History Museum, London, identified many of the specimens of species of *Melyris* in the NMNH collection.

LITERATURE CITED

- Champion, G. C. 1919. Notes on the African and Asiatic species of *Melyris*, Fab. (*sensu lato*), with an account of their sexual characters. *Annals and Magazine of Natural History* 9(4): 157–219.
- du Toit, A. P. 1990. The importance of certain insects as pollinators of sunflower (*Helianthus annuus* L.). *South Africa Journal of Plant and Soil Science* 7(3): 159–162.
- Evans, D. L. 1984. A sit-and-wait predator attacking assemblages of aposematic prey. *Abstracts, International Congress of Entomology* 17: 285.
- Grant, V. and K. A. Grant. 1965. Flower pollination in the phlox family. Columbia University Press, New York. 180 pp.
- Grobbelaar, E., J. Balciunas, O. C. Naser, and S. Naser. 2000. A survey in South Africa for insects with potential as biological control agents for Cape ivy (*Delairea odorata* Lemaire). *Proceedings California Exotic Pest Plant Council Symposiums* 6: 18–28.
- Iziko Museums of Cape Town. 2004. Genus: *Melyris*. World Wide Web document at: <http://www.museums.org.za/bio/insects/beetles/melyridae/melyris.htm>. (Accessed August 21, 2006).
- Mawdsley, J. R. 2002. Comparative ecology of the genus *Lecontella* Wolcott and Chapin, with notes on chemically defended species of the beetle family Cleridae (Coleoptera). *Proceedings of the Entomological Society of Washington* 104(1): 164–167.
- Medan, D. 1990. Reproductive phenology, pollination biology, and gynoecium development in *Discaria americana* (Rhamnaceae). *New Zealand Journal of Botany* 29: 31–42.
- Nash, T. A. M. 1933. The ecology of *Glossina morsitans*, Westw., and two possible methods for its destruction. -Part II. *Bulletin of Entomological Research* 24: 153–195 + pls. IV–V.
- Peacock, E. R. 1980. *Melyris shaumariensis* n.sp. from Jordan (Coleoptera: Melyridae). *Entomologica Scandinavica* 11: 236–240.
- Pic, M. 1929. Dasytidae: Melyrinae. *Coleopterorum Catalogus* 103: 1–32.
- Jonathan R. Mawdsley. *Research Associate, Department of Entomology, National Museum of Natural History, Smithsonian Institution, P.O. Box 37012, MRC 187, Washington, DC 20013-7012 U.S.A. (e-mail: mawdsley@heinzctr.org)*